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मानक

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Mazdoor Kisan Shakti Sangathan

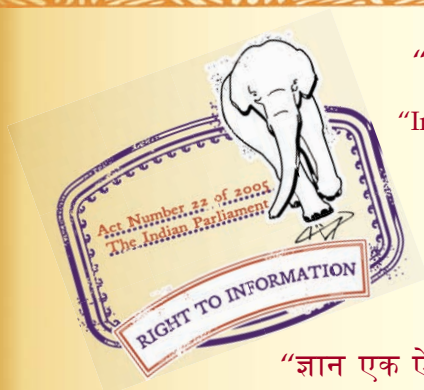
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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 13517 (1992): Rock bolts - Resin type [MED 8: Mining Techniques and Equipment]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

शैल काबले — रेज़िन टाइप — विशिष्ट

Indian Standard

ROCK BOLTS — RESIN TYPE — SPECIFICATION

UDC 621.882.6

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

September 1992

Price Group 1

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Mining Face Equipment Sectional Committee had been approved by the Heavy Mechanical Division Council.

The requirements and dimensions for rock bolts (resin type) given in this standard are based on practices followed in the industries. Resin capsules have also been covered briefly. Other Indian Standards on rock bolts are as follows:

- | | |
|-----------------|--|
| IS 7578 : 1975 | Wedge and slot type roof bolts |
| IS 8266 : 1976 | Expansion shell type roof bolts |
| IS 13219 : 1992 | Rock bolts for mines (cement grouted) — General requirements |

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ROCK BOLTS — RESIN TYPE — SPECIFICATION

1 SCOPE

This standard covers the material and general requirements of resin type rock bolts and resin capsules for the use in mines and tunnels.

2 REFERENCES

The Indian Standards given below are necessary adjuncts to this standard:

IS No.	Title
226 : 1975	Structural steel (standard quality) (<i>fifth revision</i>)
1363 (Part 3) : 1984	Hexagon nuts (size range M5 to M 36) (<i>second revision</i>)
1368 : 1987	Dimensions for ends of bolts and screws (<i>second revision</i>)
1570 (Part 4) : 1988	Schedule for wrought steels : Part 4 Alloy steel (alloy constructional and spring steels) with specified chemical composition and related mechanical properties (<i>first revision</i>)
1786 : 1985	Specification for high strength deformed steel bars and wires for concrete reinforcement (<i>third revision</i>)
4218 (Part 5) : 1979	ISO metric screw threads : Part 5 Tolerances (<i>first revision</i>)

3 SHAPE AND DIMENSIONS

3.1 Rock Bolts (Resin Type)

3.1.1 The dimensions of various parts of bolt are given in Table 1.

Table 1 Dimensions of Rock Bolts (Resin Type)

(Clause 3.1.1 and Fig. 1)

All dimensions in millimetres.

Bolt Diameter <i>d</i>	Head Size <i>A</i>	Back Plate		Thread Size
		Diameter <i>d₁</i>	Thickness <i>t₁</i>	
(1)	(2)	(3)	(4)	(5)
20	32	29	8	M20
22	36	33	8	M22
24	43	38	8	M24

3.1.2 Length of the bolts shall be in between 1.2 m to 2.4 m.

3.1.3 Head of bolts may be spiral, splitted or threaded type.

3.1.4 Typical shape of the bolt is given in Fig. 1 for guidance.

3.2 Resin Capsules

3.2.1 The capsules shall be of 26 mm/32 mm/36 mm in diameter (*D*) and 310 mm in length (*L*).

3.2.2 The typical shape of capsule is given in Fig. 2 for guidance.

4 SELECTION CRITERIA

4.1 The diameter of the bolts shall be selected on the basis of rock quality index (*R*) given below:

Bolt Diameter (<i>d</i>)	Rock Quality Index (<i>R</i>)
20 mm	31 to 50
22 mm	21 to 30
24 mm	0 to 20

4.2 The diameter of the capsules shall be selected on basis of hole size given below:

Capsule Diameter (<i>D</i>)	Hole Size (ϕ)
36 mm	43 mm
32 mm	36 mm
26 mm	32 mm

5 TOLERANCES

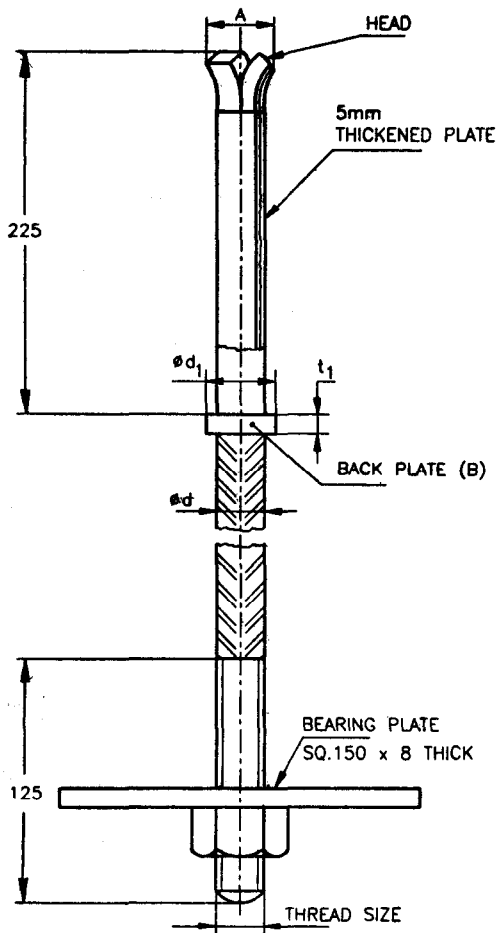
5.1 The threads on bolts and nuts shall conform to tolerance class of 8g and 7H respectively as given in IS 4218 (Part 5) : 1979.

6 GENERAL REQUIREMENTS

6.1 Bolts shall be straight, sound and free from harmful surface defects.

6.2 Ends of the bolts shall conform to IS 1368 : 1987.

6.3 Threads on bolts shall preferably be rolled so that the strength of the bolts is not reduced.



All dimensions in millimetres.

**FIG. 1 DIMENSIONS FOR ROCK BOLT
(RESIN TYPE)**

7 MATERIAL

7.1 Bolts shall be fabricated from high strength deformed steel bar (see IS 1786 : 1985) or steel

bar conforming to grade F.410S (see IS 226 : 1975) or steel designation 40C-4 [see IS 1570 (Part 4) : 1988].

7.2 Bearing plates shall be fabricated of F.410S (see IS 226 : 1975).

7.3 Nuts shall conform to product Grade — C as specified in IS 1363 (Part 3) : 1984.

8 PERFORMANCE TEST

The bolts shall be installed properly and then a pull of 50 kN shall be applied along the axis of bolt. It shall not break/crack and also the displacement of bolt shall not be more than 10 mm.

9 MARKING

9.1 Resin bolts shall be marked with the following information at visible place:

- Manufacturer's name or trade mark,
- Diameter of bolt, and
- Length of bolt.

9.2 Standard Mark

Details are available with the Bureau of Indian Standards.

10 PACKING

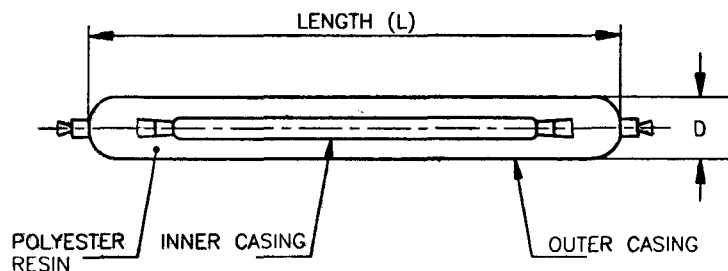
10.1 Bolts shall be packed in cleaned condition.

10.2 The capsules shall be packed suitably so that they are not damaged during transit.

11 STORAGE

11.1 Threads on the bolts shall be kept lubricated and suitably protected.

11.2 Capsules shall not be stored under direct sun light and shall not be used beyond 'Shelf life'.



All dimensions in millimetres.

FIG. 2 DIMENSIONS FOR RESIN CAPSULE

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Doc : No. HMD 09 (0031)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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